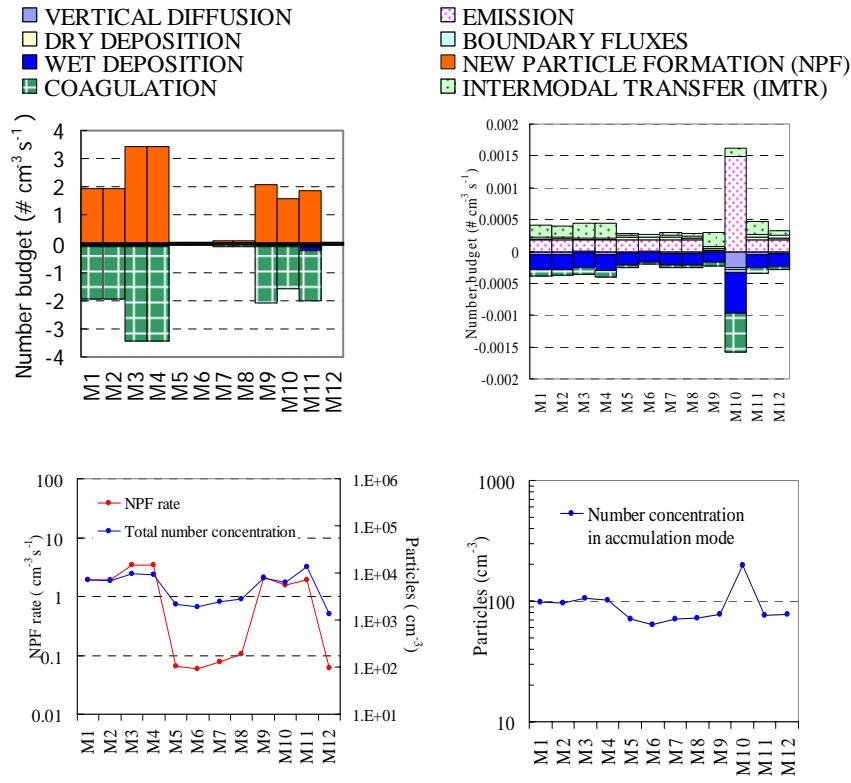


# SENSITIVITY OF MODELED NUMBER CONCENTRATIONS TO NEW PARTICLE FORMATION AND PARTICULATE EMISSIONS

Domain- and Time-averaged Results from a Chemical Transport Model at 60-km Resolution for July 2004



Model Variant	Parameterizations Included		
M1	N02	NIIR	$F_{KK02}$
M2	N02		$F_{KK02}$
M3	N02	NIIR	
M4	N02		
M5	V02	NIIR	$F_{KK02}$
M6	V02		$F_{KK02}$
M7	V02	NIIR	
M8	JVM	NIIR	$F_{KK02}$
M9	N02	NIIR	$F_{KK02}$
M10	N02	NIIR	$F_{KK02}$
M11	N02	NIIR	$F_{KK02}$
M12	EM	NIIR	$F_{KK02}$

## Parameterizations

<b>JVM</b>	Binary $\text{H}_2\text{SO}_4\text{-H}_2\text{O}$ nucleation rate: $J$ <i>Jaecker-Voirol and Mirabel, 1989</i>	<i>theory</i>
<b>V02</b>	Binary $\text{H}_2\text{SO}_4\text{-H}_2\text{O}$ nucleation rate: $J$ <i>Vehkamaki et al., 2002</i>	<i>theory</i>
<b>N02</b>	Ternary $\text{H}_2\text{SO}_4\text{-H}_2\text{O-NH}_3$ nucleation rate: $J$ <i>Napari et al., 2002</i>	<i>theory</i>
<b>NIIR</b>	Ion-ion recombination nucleation rate: $J$ <i>Turco et al., 1998</i>	<i>theory</i>
<b><math>F_{KK02}</math></b>	New particle formation rate: $J_p = F_{KK02} J$ <i>Kerminen and Kulmala, 2002</i>	<i>theory</i>
<b>EM97</b>	New particle formation rate: $J_p = K[\text{H}_2\text{SO}_4]^2$ <i>Eisele and McMurry, 1997</i>	<i>empirical</i>

- The range of variation in average total number concentration over the model variants is an order of magnitude smaller than the range of variation in average particle formation rates.
- The uncertainty in average number concentration in the accumulation mode is largely due to uncertainty in the conversion of mass emission rates to number emissions rates rather than to uncertainty in new particle formation rates.